



2012 Minerals Yearbook

IRAN

THE MINERAL INDUSTRY OF IRAN

By Philip M. Mobbs

The mineral industry held a very prominent role in the economy of Iran, and especially the hydrocarbon sector, which included the production of natural gas and oil, the refining of crude oil, and the distribution of hydrocarbons. According to BP p.l.c., Iran was the world's third-ranked producer of natural gas. Iran also was the world's sixth-ranked producer of crude oil and condensate (natural gas liquids) and accounted for about 4.2% of the world's output. About 2% of the world's crude oil refining capacity was located in the country, and Iran held 18% of proved worldwide natural gas reserves and 9.4% of proved crude oil reserves in 2012 (BP p.l.c., 2013, p. 6, 10, 16, 20, 22).

More than 40 mineral commodities were mined and about 20 metals or mineral-related commodities were refined or manufactured in Iran. The country was estimated to account for about 9% of the world's output of gypsum and pumice; more than 2% of the world's output of barite, feldspar, and sulfur; and more than 1% of the world's output of cement, industrial (or glass) sand, molybdenum, and nitrogen. Mineral-related issues (specifically uranium enrichment) negatively affected Iran's relations with the Governments of many nations (United Nations Security Council, 2010; Apodaca, 2013a, b; Crangle, 2013a, b; Dolley, 2013; Miller, 2013; Polyak, 2013; Tanner, 2013; van Oss, 2013).

Minerals in the National Economy

Iran had an extensive mineral production and processing industry. Production, processing, transportation, and sales of crude oil and natural gas accounted for about 20% of the country's nominal gross domestic product (GDP). The mining and manufacturing sector, of which the production of cement and steel were significant components, accounted for an additional 14.2% of the GDP (tables 1, 2; Antonioli and Saul, 2012; Clinton, 2012; Central Bank of the Islamic Republic of Iran, 2013, p. 2).

Various international sanctions had been imposed on Iran since the construction of the Bushehr nuclear powerplant owing to the potential for the diversion of nuclear technology and the potential for Iran to recover and disseminate nuclear material (such as plutonium) from spent fuel rods. The subsequent discovery of stand-alone uranium enrichment facilities in Iran, which potentially could produce highly enriched uranium for nuclear weapons, resulted in additional economic sanctions. In the past year, international sanctions began to affect Iran's economy noticeably, especially mineral sector activities (such as crude petroleum and metal ores), which historically have required large investments to develop the deposits and construct facilities to process the mineral production (Agence France-Presse, 2013; Brower, 2013; U.S. Government Accountability Office, 2013, p. 3–57).

The United States' Iran Threat Reduction and Syria Human Rights Act of 2012 (ITRSHRA) amended portions of the Iran Sanctions Act of 1996 and the Comprehensive Iran Sanctions,

Accountability, and Divestment Act of 2010. ITRSHRA added a number of commercial activities that are subject to sanctions. These activities, with certain conditions and exceptions, included participation in any joint venture established on or after January 1, 2002, in which the Government of Iran was a substantial partner and that developed petroleum resources outside of Iran; owning, operating, controlling, or insuring a vessel used to transport crude oil from Iran; providing insurance for the National Iranian Oil Company (NIOC); and purchasing, subscribing to, or facilitating the issuance of sovereign debt of the Government of Iran or any debt of any entity owned or controlled by the Government of Iran that was issued on or after August 10, 2012 (U.S. Department of State, 2012).

Additional Executive orders issued by the President of the United States in 2012 that concerned Iranian sanctions included Executive Order 13599 of February 5, Executive Order 13606 of April 22, Executive Order 13608 of May 1, Executive Order 13622 of July 30, and Executive Order 13628 of October 9. Public Law 112–239 of January 2, 2013 [National Defense Authorization Act for Fiscal Year 2013 (NDAA–2013)], included additional sanctions that would take effect in July 2013. Mineral sector activities affected by the subsection of NDAA–2013 that was entitled the Iran Freedom and Counter-Proliferation Act of 2012 included the sale, supply, or transfer (directly or indirectly to or from Iran) of coal, graphite, precious metals, raw (which may include ore) or semifinished metals (such as aluminum and steel), and software for integrating industrial processes (U.S. Government Printing Office, 2013, §1245–§1254; U.S. Department of the Treasury, undated).

The European Union Council Regulation (EU) No. 267/2012 restricted European imports of Iranian crude oil and petroleum products; prohibited investment by member States in the Iranian petrochemical industry; prohibited trade by member States in diamond, gold, and precious metals with the Government of Iran; and prohibited the delivery of newly printed banknotes and coinage to the Government of Iran. The United Nations (UN) had adopted Resolution 1929 in 2010 in response to Iran's apparent lack of appropriate response to previous UN resolutions that obliged Iran to suspend uranium reprocessing and enrichment activities (United Nations Security Council, 2010; European Union, 2012; Martin and Woolich, 2012).

Government Policies and Programs

The Mining Code of 1998, which was based on Articles 44 and 45 of Chapter 4 of the 1978 Constitution of the Islamic Republic of Iran, and various amendments to the Mining Code, regulate the mineral sector. The Petroleum Act of 1987 clarifies the Government's authority in the oil sector. In 2012, to offset the increased cost of domestically produced minerals, which was attributed to the effect of inflation on the Iranian rial, several mining companies and the Ministry of Industries

and Mines agreed that mineral products would be sold on the Iran Mercantile Exchange at prices determined by using the foreign currency room rate instead of the official exchange rate. The change resulted in a 15% to 20% decrease in the domestic prices of metal products and petrochemicals. In October, the Government implemented a ban on the export of about 50 products, which included several mineral products, to maintain a domestic supply of the products. The ban affected the local demand and prices of mineral products (Watanabe, 2012; Turquoise Partners, 2013, p. 3).

Production

Data on estimated mineral production in Iran are in table 1.

Structure of the Mineral Industry

The Ministry of Industries and Mines administered all mining, smelting, and refining industries, except the oil and gas sectors, which were administered by the Ministry of Petroleum. Basic geologic exploration and most initial evaluations of the Nation's mineral resources (except hydrocarbons) were performed by the Geological Survey of Iran. Most of Iran's mines were privately owned, although the Government, primarily through the Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO), controlled many of the larger capacity mining and mineral-processing companies, especially those that produced aluminum, ammonia, coal, copper, iron and steel, natural gas, petroleum, salt, and sulfur (table 2).

Mineral Trade

The Central Bank of the Islamic Republic of Iran reported that hydrocarbons accounted for about 72% of the total value of exports in 2012. Crude oil exports accounted for most of the hydrocarbon exports, which were valued at about \$78 billion in 2012 compared with about \$118 billion in 2011. The decrease was attributed to the effect of international sanctions. Iran also imported petroleum condensate, natural gas, natural gas liquids, and refined oil products, which in 2012 were valued at about \$4.9 billion, or about 7% of total imports. Hydrocarbon imports in 2011 were valued at about \$3.5 billion, or about 5% of total imports (Central Bank of the Islamic Republic of Iran, 2011a–d; 2012; 2013; Clinton, 2012).

Commodity Review

Metals

Copper and Molybdenum.—In June, National Iranian Copper Industries Co. (NICICO) opened a molybdenum concentrator at the Sungun copper complex, which was located in East Azerbaijan Province. The plant was designed to produce 3,000 metric tons per year (t/yr) of molybdenum concentrate. In October, however, the Government banned the export of molybdenum concentrate (and 50 other products). In prior years, NICICO had exported about 50% of produced molybdenum concentrate (National Iranian Copper Industries Co., 2012; Watanabe, 2012).

NICICO awarded several contracts to Outotec Oyj of Finland in 2012, which included an expansion of the Khatoonabad copper smelter, an expansion of the Miduk copper concentrator, and an expansion of the Sarcheshmeh copper concentrator. Outotec also expected to work on the development of a new copper and molybdenum concentrator at the planned Now Chun Mine in Kerman Province (Outotec Oyj, 2012a).

Iron Ore.—National Iranian Steel Co. (NISCO) inaugurated the 2-million-metric-ton-per-year (Mt/yr)-capacity Zarand iron ore concentrator, which was built by China Nonferrous Metal Industry's Foreign Engineering and Construction Company, Ltd. Also in 2012, a 300,000-t/yr-capacity iron ore concentrator was commissioned in Yazd Province and Outotec was awarded a contract to design a 5-Mt/yr-capacity iron ore pelletizing plant in Kerman Province (Outotec Oyj, 2012b; Tehran Times, 2012).

Zinc.—In September, Mehdiabad Zinc Co., which was owned by Karoun Dez Dasht (45.6% equity interest), Itok GmbH of Austria (24.5% interest), UCL Resources Ltd. of Australia (24.5% interest), and minority shareholders (5.4% interest), entered into an agreement with IMIDRO that would allow Mehdiabad Zinc to develop the Mehdiabad project. The proposed mining project was expected to operate for 25 years, with a negotiated maximum mine production capacity of 100,000 t/yr of zinc concentrate. Mehdiabad Zinc also was authorized to build an associated zinc smelter with a capacity to produce 100,000 t/yr of zinc ingot. The project had been on care-and-maintenance status since 2006 owing to a dispute between IMIDRO and Mehdiabad Zinc (Minemakers Ltd., 2012, p. 2).

Outlook

Numerous production-capacity expansion projects and new mineral commodity development projects in Iran's mineral sector are planned. IMIDRO estimates that implementation of the mineral projects proposed in the fifth 5-year national development plan, which ends in 2015, will cost more than \$28 billion. Some foreign investment has been made in the mineral sector in the past few years; however, in recent years, the availability of international funding for capital-intensive development of mineral-related projects by Government-controlled and private companies operating in Iran has been impaired owing, in part, to international economic sanctions. Other issues (besides sanctions) that are expected to affect the Iranian mineral sector include high inflation and the relative lack of investment in the petroleum sector (Khajehpour, 2013; Rezaian, 2013; Trend News Agency, 2014).

References Cited

- Agence France-Presse, 2013, Sanctions cost Iran \$40 bn in 2012, says IEA: Global Energy World, February 13. (Accessed February 14, 2013, at http://www.globalenergyworld.com/news/7282/Sanctions_cost_Iran_USD40_bn_in_2012_says_IEA.htm.)
- Antonioli, Silvia, and Saul, Jonathan, 2012, Steel sanctions cut deep into Iran's economy: Thomson Reuters, November 11. (Accessed February 6, 2013, at <http://www.reuters.com/article/2012/11/11/us-iran-sanctions-steel-idUSBRE8AA02P20121111>.)
- Apodaca, L.E., 2013a, Nitrogen (fixed)—Ammonia: U.S. Geological Survey Mineral Commodity Summaries 2013, p. 112–113.

- Apodaca, L.E., 2013b, Sulfur: U.S. Geological Survey Mineral Commodity Summaries 2013, p. 158–159.
- BP p.l.c., 2013, BP statistical review of world energy June 2013: London, United Kingdom, BP p.l.c., 45 p.
- Brower, Derek, 2013, Are sanction on Iran working?: *Petroleum Economist*, v. 80, no. 4, May, p. 8.
- Central Bank of the Islamic Republic of Iran, 2011a, Bahman—Balance of payments: Central Bank of the Islamic Republic of Iran. (Accessed December 8, 2012, at <http://www.cbi.ir/page/8670.aspx>.)
- Central Bank of the Islamic Republic of Iran, 2011b, Dey—Balance of payments: Central Bank of the Islamic Republic of Iran. (Accessed December 8, 2012, at <http://www.cbi.ir/page/8669.aspx>.)
- Central Bank of the Islamic Republic of Iran, 2011c, Esfand—Balance of payments: Central Bank of the Islamic Republic of Iran. (Accessed December 8, 2012, at <http://www.cbi.ir/page/8671.aspx>.)
- Central Bank of the Islamic Republic of Iran, 2011d, Farvardin to Azar—Balance of payments: Central Bank of the Islamic Republic of Iran. (Accessed December 8, 2012, at <http://www.cbi.ir/page/7976.aspx>.)
- Central Bank of the Islamic Republic of Iran, 2012, Farvardin to Bahman—Balance of payments: Central Bank of the Islamic Republic of Iran. (Accessed December 8, 2012, at <http://www.cbi.ir/page/9388.aspx>.)
- Central Bank of the Islamic Republic of Iran, 2013, Balance of payments—Current account: Central Bank of the Islamic Republic of Iran, *Economic Trends*, no. 71, Fourth quarter 1391 (2012/2013), November, 29 p. (Accessed January 9, 2014, at <http://www.cbi.ir/page/11188.aspx>.)
- Clinton, H.R., 2012, Regarding significant reductions of Iranian crude oil purchases: Washington, DC, U.S. Department of State, December 7, 1 p. (Accessed December 6, 2013, at <http://www.state.gov/secretary/rm/2012/12/201683.htm>.)
- Crangle, R.D., Jr., 2013a, Gypsum: U.S. Geological Survey Mineral Commodity Summaries 2013, p. 70–71.
- Crangle, R.D., Jr., 2013b, Pumice and pumicite: U.S. Geological Survey Mineral Commodity Summaries 2013, p. 124–125.
- Dolley, T.P., 2013, Sand and gravel (industrial): U.S. Geological Survey Mineral Commodity Summaries 2013, p. 138–139.
- European Union, 2012, Council Regulation (EU) No. 267/2012 of 23 March 2012 concerning restrictive measures against Iran and repealing regulation (EU) No 961/2010: European Union, March 24, 112 p. (Accessed December 7, 2013, at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:088:0001:0112:en:PDF>.)
- Khajehpour, Bijan, 2013, Can Rouhani resolve Iran’s economic conundrum?: Washington, DC, Woodrow Wilson International Center for Scholars, *Viewpoints*, no. 33, July, 5 p.
- Martin, Daniel, and Woolich, Anthony, 2012, If in doubt? Don’t do it: *Petroleum Economist*, v. 79, no. 4, May, p. 12.
- Miller, M.M., 2013, Barite: U.S. Geological Survey Mineral Commodity Summaries 2013, p. 24–25.
- Minemakers Ltd., 2012, Second supplementary bidder’s statement—In relation to the offer by UCL Resources Limited CAN 002 118 872 (UCL) to acquire all of your shares in Minemakers Limited CAN 116 296 541 (MAK): Minemakers Ltd., September 7, 8 p. (Accessed December 5, 2013, at <http://www.minemakers.com.au/downloads/120907SecondSupplementaryBiddersStatementfromUCL.pdf>.)
- National Iranian Copper Industries Co., 2012, Molybdenum project of Songoun copper complex inaugurated: National Iranian Copper Industries Co., October 6. (Accessed December 3, 2013, at <http://www.nicico.com/DesktopModules/News/NewsView.aspx?TabID=1&Site=DouranPortal&Lang=en-US&ItemID=5719&mid=14574&wVersion=Staging>.)
- Outotec Oyj, 2012a, Outotec awarded several orders for the copper and molybdenum projects in Iran: Outotec Oyj, July 10. (Accessed December 28, 2013, at <http://www.outotec.com/en/Media/News/2012/Outotec-awarded-several-orders-for-the-copper-and-molybdenum-projects-in-Iran>.)
- Outotec Oyj, 2012b, Outotec to deliver iron ore pelletizing technology to Gol-e-Gohar, Iran: Outotec Oyj, April 18. (Accessed December 3, 2013, at <http://www.outotec.com/en/Media/News/2012/Outotec-to-deliver-iron-ore-pelletizing-technology-to-Gol-E-Gohar-Iran/>.)
- Polyak, D.E., 2013, Molybdenum: U.S. Geological Survey Mineral Commodity Summaries 2013, p. 106–107.
- Rezaian, Jason, 2013, Iran’s middle class feels squeeze of sanctions: *The Washington Post*, February 25, p. A7.
- Tanner, A.O., 2013, Feldspar: U.S. Geological Survey Mineral Commodity Summaries 2013, p. 54–55.
- Tehran Times, 2012, Iran to open 300,000-t iron ore concentrates plant: *Tehran [Iran] Times*, November 18. (Accessed December 6, 2013, at <http://www.tehrantimes.com/economy-and-business/103405-iran-to-open-300000-ton-iron-ore-concentrates-plant>.)
- Trend News Agency, 2014, Iran has potential to extract up to 80 minerals—Official: Bloomberg L.P., January 6. (Accessed January 9, 2014, at http://investing.businessweek.com/research/markets/news/article.asp?docKey=600-201401060947KRTRIB_BUSNEWS_6651_3674-1.)
- Turquoise Partners, 2013, *Iran Investment Monthly*: Turquoise Partners, v. 7, no. 76, January, 10 p.
- United Nations Security Council, 2010, Resolution 1929: United Nations Security Council, June 9. (Accessed December 6, 2012, at [http://www.un.org/ga/search/view_doc.asp?symbol=S/RES/1929\(2010\)](http://www.un.org/ga/search/view_doc.asp?symbol=S/RES/1929(2010)).)
- U.S. Department of State, 2012, Iran sanctions contained in the Iran Threat Reduction and Syria Human Rights Act (ITRSHRA): U.S. Department of State, Bureau of Economic and Business Affairs Fact Sheet, September 28. (Accessed December 7, 2013, at <http://www.state.gov/e/eb/rls/fs/2012/198393.htm>.)
- U.S. Department of the Treasury, [undated], Iran sanctions: U.S. Department of the Treasury. (Accessed December 7, 2013, at <http://www.treasury.gov/resource-center/sanctions/Programs/pages/iran.aspx>.)
- U.S. Government Accountability Office, 2013, Iran—U.S. and international sanctions have adversely affected the Iranian economy: U.S. Government Accountability Office, 58 p. (Accessed April 11, 2013, at <http://www.gao.gov/assets/660/652314.pdf>.)
- U.S. Government Printing Office, 2013, Public Law 112–239—Jan. 2, 2013—National Defense Authorization Act for fiscal year 2013: U.S. Government Printing Office, unpaginated. (Accessed December 3, 2013, at <http://www.gpo.gov/fdsys/pkg/PLAW-112publ239/pdf/PLAW-112publ239.pdf>.)
- van Oss, H.G., 2013, Cement: U.S. Geological Survey Mineral Commodity Summaries 2013, p. 38–39.
- Watanabe, Mayumi, 2012, Iran’s ban on molybdenum concentrate exports seen to have little impact: *Platts.com*, November 2. (Accessed December 3, 2013, at <http://www.platts.com/latest-news/metals/tokyo/irans-ban-on-molybdenum-concentrate-exports-seen-7216879>.)

TABLE 1
IRAN: ESTIMATED PRODUCTION OF MINERAL COMMODITIES^{1,2}

(Metric tons unless otherwise specified)

Commodity ³	2008	2009	2010	2011	2012
METALS					
Aluminum:					
Bauxite, gross weight	715,339 ⁴	522,018 ⁴	681,235 ⁴	818,224 ^{r,4}	820,000
Metal, primary ingot	200,000	200,000	192,000	223,554 ⁴	230,000
Chromite, mine output, concentrate:					
Gross weight	268,586 ⁴	225,129 ⁴	45,000 ⁴	417,554 ^{r,4}	400,000
Cr ₂ O ₃ content	130,000	110,000	22,000	200,000 ^r	190,000
Copper:					
Mine output:					
Ore mined (0.6% to 1.2% Cu):					
Gross weight	26,500	27,000	27,500	37,309 ^{r,4}	38,000
Cu content	248,000	263,000	257,000	259,000	260,000
Concentrate (29% to 35% Cu):					
Gross weight	740,000	750,000	760,000	940,000 ^r	950,000
Cu content	240,000	250,000	255,000	255,000	260,000
Metal:					
Smelter output, blister or anode	248,000	262,000	279,000	280,000 ^r	270,000
Refined output, cathode	201,000	210,254 ⁴	220,000	227,000	225,000
Gold, mine output, Au content ⁵	1,000	2,000	2,000	2,000	2,500
Iron and steel:					
Ore and concentrate:					
Gross weight	35,000 ^r	34,034 ⁴	35,000	44,355 ^{r,4}	50,000
Fe content	16,500	16,000	16,500	20,900 ^r	24,000
Metal:					
Pig iron	2,200	2,400	2,500	2,500	3,000
Direct-reduced iron	7,500	8,200	9,400	10,400	11,600
Steel, crude, ingots and castings	9,960	10,000	12,000	13,000	14,000
Lead:					
Mine output, concentrate:					
Gross weight	53,000	39,254 ⁴	50,000 ^r	80,000 ^r	80,000
Pb content	26,905 ⁴	20,000	25,000 ^r	40,000 ^r	40,000
Manganese, mine output (30% to 35% Mn):					
Gross weight	115,000	125,506 ⁴	131,561 ⁴	194,428 ^{r,4}	200,000
Mn content	40,000	45,000	46,000	68,000 ^r	70,000
Molybdenum, mine output, concentrate:					
Gross weight	6,597 ⁴	4,447 ⁴	7,000	6,118 ^{r,4}	7,000
Mo content	3,700	2,500	3,900	3,400 ^r	3,900
Zinc:					
Mine output, concentrate:					
Gross weight	130,000	150,000	160,000	210,000 ^r	210,000
Zn content	69,267 ⁴	72,048 ⁴	80,000	105,000 ^r	105,000
Metal	60,000	65,000	65,000	80,000 ^r	80,000
INDUSTRIAL MINERALS					
Barite	226,590 ⁴	361,217 ⁴	326,275 ⁴	271,454 ^{r,4}	270,000
Boron, borax	1,020 ⁴	388 ⁴	500	1,044 ^{r,4}	1,000
Cement, hydraulic	44,400	50,000	55,000	66,000	70,000
Clays:					
Bentonite	375,898 ⁴	387,437 ⁴	350,208 ⁴	377,398 ^{r,4}	400,000
Industrial clays	530,000	530,000	550,000	550,000	550,000
Kaolin	320,000	907,487 ⁴	1,480,291 ⁴	2,000,000 ^r	1,500,000
Diatomite	2,000 ⁴	--	--	--	--
Feldspar	501,821 ⁴	634,503 ⁴	652,020 ⁴	576,643 ^{r,4}	580,000
Fluorspar	61,592 ⁴	71,409 ⁴	72,000	55,976 ^{r,4}	60,000
Gemstones, turquoise	19,000	19,000	20,000	20,000	21,000
Gypsum	11,251 ⁴	13,000	11,914 ⁴	14,657 ^{r,4}	15,000
Industrial or glass sand (quartzite and silica)	2,000	1,500	1,500	1,500	1,500
Lime	2,700	2,600	2,700	2,800 ^r	2,800

See footnotes at end of table.

TABLE 1—Continued
 IRAN: ESTIMATED PRODUCTION OF MINERAL COMMODITIES^{1,2}

(Metric tons unless otherwise specified)

Commodity ³	2008	2009	2010	2011	2012
INDUSTRIAL MINERALS—Continued					
Magnesite	115,987 ⁴	130,575 ⁴	126,702 ^{r,4}	172,697 ^{r,4}	170,000
Mica	1,510 ⁴	6,797 ⁴	2,860 ⁴	7,130 ^r	7,000
Nitrogen:					
N content of ammonia	2,000,000	2,000,000	2,500,000	2,500,000	2,500,000
N content of urea	1,300,000	1,300,000	1,600,000	1,600,000	1,600,000
Phosphate rock:					
Ore	330,000 ^r	540,000 ^r	210,000 ^r	98,081 ^{r,4}	100,000
P ₂ O ₅ content	37,000	62,000 ^r	24,000 ^r	11,000 ^r	11,000
Salt	2,158,280 ⁴	2,816,235 ⁴	3,291,063 ⁴	2,714,735 ^{r,4}	3,000,000
Stone, construction and building, crushed ⁶	thousand metric tons	25,000	25,000	26,000	26,000
Strontium, celestite	2,000	15,396 ⁴	-- ^r	40,000 ^r	20,000
Sulfur:					
Byproduct of petroleum and natural gas	1,500,000	1,500,000	1,700,000	1,700,000	1,800,000
Byproduct of metallurgical processing, S content of acid	70,000	70,000	80,000	80,000	90,000
Total	1,570,000	1,570,000	1,800,000	1,800,000	1,900,000
Talc	89,110 ⁴	66,383 ⁴	95,767 ⁴	58,987 ^{r,4}	60,000
MINERAL FUELS AND RELATED MATERIALS					
Coal	thousand metric tons	2,636 ^{r,4}	2,181 ⁴	2,300	2,499 ^{r,4}
Coke	do.	1,300	1,300	1,350	1,350
Gas, natural:					
Gross	million cubic meters	175,000	200,000	220,000 ^r	230,000 ^r
Dry	do.	116,000	131,000	146,000 ^r	152,000 ^r
Gas plant liquids	thousand 42-gallon barrels	140,000	140,000	145,000	145,000
Petroleum:					
Crude	do.	1,490,000	1,450,000 ⁴	1,590,000 ^r	1,590,000 ^r
Refinery products:					
Liquefied petroleum gases	do.	19,000 ^r	20,000 ^r	21,000 ^r	22,000 ^r
Motor gasoline	do.	102,000	103,000 ^r	103,000 ^r	109,000 ^r
Jet fuel	do.	8,100 ^r	9,600 ^r	10,200 ^r	8,900 ^r
Kerosene	do.	49,000	43,000 ^r	35,000 ^r	34,000 ^r
Distillate fuel oil	do.	196,000	204,000 ^r	209,000 ^r	217,000 ^r
Residual fuel oil	do.	178,000	175,000 ^r	175,000 ^r	177,000 ^r
Other	do.	19,000	25,000 ^r	24,000 ^r	28,000 ^r
Total	do.	571,000 ^r	579,000 ^r	577,000 ^r	596,000 ^r

^rRevised. do. Ditto. -- Zero.

¹Estimated; estimated data are rounded to no more than three significant digits; may not add to totals shown.

²Table includes data available through January 13, 2014.

³In addition to the commodities listed, the following may have been produced, but information is inadequate to estimate output: alumina, antimony, arsenic, bromine, caustic soda, crude construction materials (such as sand and shell), dimension stone, dolomite, ferroalloys, hafnium oxide, ilmenite, iron oxide pigments, refined lead, limestone, nepheline syenite, perlite, pumice, selenium, silicomanganese, silver, soda ash, uranium, zeolite, and zirconium metal.

⁴Reported figure.

⁵Includes gold recovered from the Mouteh gold mine and from the Sarcheshmeh copper complex.

⁶Includes marble and travertine.

TABLE 2
IRAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2012^{1,2}

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Alumina	Iran Alumina Co. (Government)	Northeast of Jajarm, Khorasan-e Shomali Province	280
Aluminum	Iran Aluminium Co. [Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO) ³ majority interest, and a joint venture of Industrial Development Investment Co. and a subsidiary of Mehr Finance & Credit Institution, 40%]	Arak, Markazi Province	190
Do.	Almahdi Hormozal Aluminium Co.	Bandar Abbas, Hormozgan Province	257
Bauxite	Iran Alumina Co. (Government)	Jajarm Mine, about 15 kilometers northeast of Jajarm	500
Cement	Abadeh Cement Co.	Abadeh, Fars Province	175
Do.	Abyek Cement Co. (Fars & Khuzestan Cement Co.)	Abyek, Qazvin Province, 80 kilometers northwest of Tehran	5,100
Do.	Anarak Special Cement Co.	Anarak, Markazi Province	500
Do.	Ardebil Cement Co. (Espandar Cement Investment Co.)	Namin, Ardabil Province	1,050
Do.	Ardestan Cement Co.	North of Esfahan, Esfahan Province	1,000
Do.	Behbahan Cement Co. (Fars & Khuzestan Cement Co.)	Behbahan, Khuzestan Province	960
Do.	Benvid White Cement Co. (Bank Melli Iran Investment Co.)	Benvid, Esfahan Province	175
Do.	Bojnourd Cement Plant (Fars & Khuzestan Cement Co.)	About 37 kilometers from Bojnourd, Khorasan-e Shomali Province	700
Do.	Bushehr Cement Co. (Dashtestan Cement)	Borazjan, Bushehr Province	1,000
Do.	Darab Cement Co. [General public (Justice shares), 50%, and Bank Melli Iran Investment Co., 29%]	About 190 kilometers southeast of Shiraz, Fars Province	1,100
Do.	Doroud Cement Co. (Fars & Khuzestan Cement Co.)	Doroud, Lorestan Province	1,400
Do.	Ekbatan Cement Co. (Espandar Cement Investment Co.)	Ekbatan, Tehran Province	175
Do.	Estahban Cement Co.	20 kilometers west of Estahban, Fars Province	350
Do.	Faraz Firouzkhu Cement Co. (Espandar Cement Investment Co.)	About 180 kilometers northeast of Tehran	1,200
Do.	Fars Cement Co. (Fars & Khuzestan Cement Co.)	Shiraz, Fars Province	2,000
Do.	Fars Nov Cement Co. (Fars & Khuzestan Cement Co.)	About 65 kilometers southeast of Shiraz, Fars Province	1,000
Do.	Firozkuh	Firozkuh	1,100
Do.	Ghaen Cement Co. (Cement Investment and Development Co., 26%, and Bank Melli Iran Investment Co., 14%)	Qayen (Ghaen), Khorasan-e Jonubi Province	770
Do.	Gharb Cement Co. (Fars & Khuzestan Cement Co.)	Kermanshah, Kermanshah Province	700
Do.	Hegmatan Cement Co. (Tehran Cement Co., 79%)	East of Razan, Hamadan Province	1,000
Do.	Hormozgan Cement Co. (OMID Investment Co.)	About 75 kilometers west of Bandar Abbas	2,200
Do.	Ilam Cement Co. (Tehran Cement Co., 47%)	Northeast of Ilam, Ilam Province	700
Do.	Isfahan Cement Co.	Esfahan, Esfahan Province	1,100
Do.	Karoon Cement Co.	Near Masjed Soleyman, Khuzestan Province	1,100
Do.	Kavir Kashan Cement Co. (Espandar Cement Investment Co.)	Near Kashan, Esfahan Province	660
Do.	Kerman Cement Co. (Bank Melli Iran Investment Co., 38%)	Kerman, Kerman Province	1,260
Do.	Khash Cement Co. (Fars & Khuzestan Cement Co.)	Khash, Sistan va Baluchestan Province	730 ^e
Do.	Khazar Cement Co. (Fars & Khuzestan Cement Co.)	About 80 kilometers northwest of Qazvin, Qazvin Province	1,200
Do.	Khuzestan Cement Co. (Fars & Khuzestan Cement Co.)	Ramhormoz, Khuzestan Province	1,100 ^e
Do.	Kohkiloye Yasuj Cement (State Retirement Organization ³ and Fars & Khuzestan Cement Co.)	Behbahan, near Deh Dasht, Kohkiloye, Kohgiluyeh va Bowyer Ahmad Province	240
Do.	Kordestan Cement Co. (Ghadir Investment Co.)	North of Bijar, Kordistan Province	1,000
Do.	Lar-e Sabzevar Cement Co.	Sabzevar, Khorasan-e Razavi Province	1,100
Do.	Loshan Cement Co. (Tehran Cement Co., 66%)	Loshan, Gilan Province	100
Do.	Mazandaran Cement Co. (Bank Melli Iran Investment Co., 60%)	Neka, Mazandaran Province	1,600
Do.	Neyriz White Cement Co. (Fars & Khuzestan Cement Co.)	Neyriz, Fars Province	160
Do.	Omran Anarak Cement Co.	Delijan, Markazi Province	1,030
Do.	Qeshm Cement Co.	Qeshm Island, Hormozgan Province	250
Do.	Sarooj Bushehr International Co.	Kangan, Bushehr Province	1,600
Do.	Saveh Grey Cement Co. (Fars & Khuzestan Cement Co.)	Saveh, Markazi Province	2,200
Do.	Saveh White Cement Co. (Fars & Khuzestan Cement Co.)	do.	350
Do.	Sepahan Cement Co. (Ghadir Investment Co.)	Mobarekeh, Esfahan Province	2,300
Do.	Shahroud Cement Co. (Fars & Khuzestan Cement Co.)	Shahroud, Semnan Province	600
Do.	Sharg Cement Co. (Ghadir Investment Co.)	Mashhad, Khorasan-e Razavi Province	1,600

See footnotes at end of table.

TABLE 2—Continued
IRAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2012^{1,2}

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Cement—Continued	Shemal Cement Co. (Bank Mellī Iran Investment Co., 59%)	Pardis, Tehran Province	880
Do.	Soufian Cement Co. (Fars & Khouzestan Cement Co. and Social Security Organization Investment Co.)	About 33 kilometers northwest of Tabriz, East Azerbaijan Province	1,500
Do.	Tehran Cement Co. (Ghadir Investment Co.)	Tehran, Tehran Province	6,000
Do.	Urmia Cement Co. (Fars & Khouzestan Cement Co.)	Orumiyeh, West Azerbaijan Province	740
Do.	Urumieh White Cement Co.	do.	180
Do.	Yazd Bohrouk Cement Co.	Yazd, Yazd Province	1,100
Do.	Zanjan Cement Co. (Fars & Khouzestan Cement Co.)	Zanjan, Zanjan Province	600
Do.	Zarveh Torbat Cement Co.	Torbat-Heydareh, Khorasan-e Razavi Province	1,100
Chromite	Faryab Mining Co.	Faryab Mine and processing plant, Minab, Hormozgan Province	180 ^e
Do.	Esfandaghe Mines Co.	Abdasht Mine, Kerman Province; Suqan (Saboughan) Mine, Kerman Province; Processing plant at Esfandaghe, Kerman Province	30
Do.	NA	Furumad Mine, Shahrud, Semnan Province; Gaft processing plant, Semnan Province	6
Do.	NA	Mir Mahmud Mine, Mayami, Semnam Province	6
Do.	NA	Dumak Mine, Zahedan, Sistan va Baluchestan Province	2
Coke	Isfahan Steel Co. [Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO)] ³	Plant about 40 kilometers southwest of Esfahan, Esfahan Province	900
Do.	Zarand Iranian Steel Co.	Zarand, Kerman Province	400
Copper:			
Concentrate	National Iranian Copper Industries Co. (NICICO) [Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO)] ³	Sarcheshmeh Mine, south of Rafsanjan, Kerman Province	670
Do.	do.	Sungun copper mine, East Azerbaijan Province	150
Do.	do.	Miduk copper mine, Kerman Province	150
Do.	do.	Qal'eh Zari Mine, about 120 kilometers southwest of Birjand, Khorasan-e Jonubi Province	10
Do.	do.	Chah Firozeh, Chah Messi, Darehzar, and Eijo copper mines, Kerman Province	NA
Do.	Private cooperatives	Chah Musa Mine and Qal'eh Sukhteh, Semnan Province	5
Smelter output	National Iranian Copper Industries Co. (NICICO) [Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO)] ³	Smelter, Sarcheshmeh copper complex, south of Rafsanjan, Kerman Province	158
Do.	do.	Smelter near Khatoonabad, Kerman Province	80
Refined metal	do.	Refinery, Sarcheshmeh copper complex, south of Rafsanjan, Kerman Province	210
Do.	do.	Electrowon plant, Sarcheshmeh copper complex, south of Rafsanjan, Kerman Province	14
Gemstones, turquoise	NA	Neyshabur Mine, Khorasan-e Razavi Province	6 ^e
Gold:			
Ore	kilograms Iran Gold Co.	Muteh Mine (Chah Khaton and Senjedeh pits), Esfahan Province, and Kuh-e-Zar Mine, Semnan Province	600
Do.	do.	National Iranian Copper Industries Co. (NICICO) [Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO)] ³	Coproduct of production from various copper mines
Do.	do.	Pooya Zarcan Agh Darreh	1,000 ⁴
Do.	do.	Artisanal placer operations	Neyshabur area, Khorasan-e Razavi Province
Metal ⁵	do.	National Iranian Copper Industries Co. (NICICO) [Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO)] ³	Sarcheshmeh copper complex, south of Rafsanjan, Kerman Province

See footnotes at end of table.

TABLE 2—Continued
 IRAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2012^{1,2}

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Iron and steel:			
Iron ore	Chadormalu Mining and Industrial Co. [Omid Investment Management Corp., 37%; Mines and Metals Development Investment Co., 15%; Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO), ³ 8%]	Chadormalu Mine, 80 kilometers north of Bafgh, Yazd Province	6,500
Do.	Gol-e-Gohar Iron Ore Co. [Omid Investment Management Corp., 39%; Mines and Metals Development Investment Co., 28%; Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO), ³ 18%]	Gol-e-Gohar Mine, about 50 kilometers southwest of Sirjan, Kerman Province	3,800
Do.	Iran Central Plateau Iron Ore Co. [National Iranian Steel Co. (NISCO), 100%] ⁶	Choghart Mine, Bafgh, Yazd Province	7,400
Do.	Iranian Minerals Production and Supply Co. (IMPASCO) [Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO) ³]	Jalal Abad Mine, about 40 kilometers northwest of Zarand	1,700
Do.	NA	Chah Gaz Mine, Yazd Province	NA
Do.	NA	Mishdovan Mine, Yazd Province	NA
Do.	Sangan Iron Ore Co. (National Iranian Steel Co., 100%) ³	Sangan (Songun) Mine, about 140 kilometers southeast of Torbat e-Heydariyeh, Khorasan-e Razavi Province	2,000
Do.	About 20 small privately owned mines	NA	1,000 ^c
Iron:			
Cast iron	Zagros Steel Co. (Government, majority interest)	Foundry in Kordistan Province	70
Iron metal	Mobarekeh Steel Co. [Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO), ³ majority interest; Social Security Organization, ³ 10%; a subsidiary of Mehr Finance & Credit Institution, 5%, and the Steel Employees Fund, 5%]	Direct-reduction iron plant (Midrex [®] process) about 50 kilometers southwest of Esfahan, Esfahan Province	4,000
Do.	Khouzestan Steel Co. [Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO), ³ majority interest]	Direct-reduction iron plant (HYL I, Midrex [®] , and Purofer processes), Ahwaz, Khuzestan Province	3,200
Do.	Hormozgan Steel Complex [National Iranian Steel Co. (NISCO) ⁶ and partners]	Direct-reduction iron plant (Midrex [®] process)	850
Do.	Isfahan Steel Co. [Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO)] ³	Direct-reduction iron plant (Ghaem process) about 40 kilometers southwest of Esfahan, Esfahan Province	600
Steel, crude	Mobarekeh Steel Co. [Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO), ³ majority interest; Social Security Organization, ³ 10%; a subsidiary of Mehr Finance & Credit Institution, 5%; the Steel Employees Fund, 5%]	Plant about 50 kilometers southwest of Esfahan, Esfahan Province	4,200
Do.	Khouzestan Steel Co. [Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO), ³ majority interest]	Plant at Ahwaz, Khuzestan Province	2,600
Do.	Isfahan Steel Co. [Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO)] ³	Plant about 40 kilometers southwest of Esfahan, Esfahan Province	2,200
Do.	Khorasan Steel Co. [Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO), ³ majority interest, and a Government pension fund, 40%]	Plant at Neyshabur, Khorasan-e Razavi Province	650
Do.	Vian Steel Melting and Casting Co.	Plant, about 42 kilometers of Hamadan, Hamadan Province	600
Do.	Meibod (Maybod) Steel Co. [Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO)], ³ 50%	About 15 kilometers southwest of Meybod, Yazd Province	300
Magnesite	Birjand Refractory Mining Co. (Iranian Refractories Procurement & Production Co.)	Hoz Sefid, Shirkuhak, and Torshak Mohammadi Mines, about 50 kilometers southeast of Birjand, Khorasan-e Jonubi Province	NA

See footnotes at end of table.

TABLE 2—Continued
IRAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2012^{1,2}

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Molybdenum, concentrate		National Iranian Copper Industries Co. (NICICO) [Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO)] ³	Molybdenum plant, Sarcheshmeh copper complex, south of Rafsanjan, Kerman Province	8
Do.		do.	Molybdenum plant, Sungun copper complex, East Azerbaijan Province	3
Natural gas	billion cubic meters	National Iranian Oil Co. (Government, 100%)	Associated gas from company oilfields	96
Do.	do.	do.	Aghar, Dalan, Kangan, and Nar gasfields	57
Do.	do.	Pars Oil and Gas Co. (National Iranian Oil Co., 100%) ³	South Pars gasfields, offshore	32 ⁷
Petroleum:				
Crude	million 42-gallon barrels	National Iranian Oil Co. (Government, 100%)	Onshore oilfields include the Agha Jari, the Ahwaz-Asmari, the Bangestan, the Hakimeh, the Gachsaran, the Karanj, the Marun, the Pazanan, and the Rag-e-Safid. Offshore oilfields include the Abouzar and the Salman	1,400
Do.	do.	National Iranian Oil Co. and buyback contract joint venture of Shell Iran Nowrooz/Soroosh Development (70%), JJI S&N B.V. (20%), and Iranian Offshore Engineering & Construction Co. (10%)	Nowrooz and Soroosh fields, offshore	75
Do.	do.	National Iranian Oil Co. and buyback contract joint venture of Total S.A. (55%) and Eni SpA (45%)	Doroud field, offshore	65
Do.	do.	National Iranian Oil Co. and buyback contract joint venture of Total S.A. (70%) and PETRONAS Carigali International Sdn Bhd (30%)	Sirri A and E fields, offshore	40
Do.	do.	National Iranian Oil Co. and buyback contract joint venture of Total S.A. (60%) and Naftiran Intertrade Co. (40%)	Darquain field, onshore	17
Refined products	thousand 42-gallon barrels per day	National Iranian Oil Refining and Distribution Co. (NIORDC) (Government, 100%)	Refineries at Abadan, Arak, Bandar Abbas, Esfahan, ⁸ Kermanshah, Lavan, Shiraz, Tabriz, and Tehran	1,728
Phosphate rock		Esfordi Phosphate Complex (Iran Minerals Production & Supply Co.) ³	About 35 kilometers northeast of Bafgh, Yazd Province	500
Titanium, ilmenite		Kahnuj pilot plant [Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO)] ³	Daregaz placer and Kahnuj titanium dioxide processing plant	NA
Uranium	metric tons	Atomic Energy Organization of Iran (Government)	Saghand Mine, about 125 kilometers northeast of Yazd, Yazd Province	50 ^e
Do.	do.	do.	Gchine Mine, near Bandar Abbas, Hormozgan Province	21 ^e
Zinc:				
Ore		Iran Zinc Mine Development Co.	Angouran open pit mine, Dandi, Zanjan Province	500 ⁹
Do.		BAMA Co. (IranKouh)	Irankouh complex (Gooshfil underground and Tappeh Sorkh open pit mines, about 20 kilometers southeast of Esfahan, Esfahan Province, and Kolah Darvazeh Mine, south of Esfahan, Esfahan Province)	190 ⁹
Do.		Bafgh Mining Co.	Kushk Mine, Yazd Province	120 ⁹
Do.		Ber-Oner Tehran Co.	Emarat Mine, about 25 kilometers southwest of Arak, Markazi Province	100 ⁹
Refined metal		Bafgh Zinc Co. (Iran Zinc Mine Development Co.)	West of Bafgh, Yazd Province	30
Do.		Qeshm Zinc Smelter Co. (affiliate of Calcimine Co.)	Kaveh Industrial Zone, Qeshm Island, Hormozgan Province	20
Do.		Calcimine Co. (Iran Zinc Mine Development Co.)	Dandi (Angouran) plant, Zanjan Province	18
Do.		Faravari Mavad Madani Iran Co. (Iran Zinc Mine Development Co.)	Dandi, Zanjan Province	18
Do.		National Iranian Lead and Zinc Co. (Iran Zinc Mine Development Co.)	About 12 kilometers east of Zanjan, Zanjan Province	15
Do.		Bandar Abbas Zinc Production Co. (affiliate of Calcimine Co.)	Bandar Abbas, Hormozgan Province	13
Do.		Zanjan Zinc Smelter Co. (affiliate of Calcimine Co.)	Zanjan, Zanjan Province	5

See footnotes at end of table.

TABLE 2—Continued
IRAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2012^{1,2}

⁶Estimated. Do., do. Ditto. NA Not available.

¹About 3,000 mines that are located in Iran are active. About 65% of the active mines and quarries produce building and construction materials, such as aggregate, sand, and stone.

²Data were augmented by input from the Iranian National Committee of the World Mining Congress.

³Government owned.

⁴Operations suspended.

⁵Recovered from Sarcheshmeh copper plant slimes.

⁶A subsidiary of state-owned Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO).

⁷May include basic sediment and condensate.

⁸Held 95% equity interest.

⁹Includes lead and zinc ores.